

What Is Claimed Is:

1. A howling detector, comprising:

a frequency analyzing section for analyzing a frequency of a time signal;

a level calculating section for calculating a level of a signal output from the frequency analyzing section;

a howling detecting section for analyzing the level having been calculated by the level calculating section and deciding whether howling occurs or not;

a periodic signal detecting section for deciding whether or not time progression of the level having been calculated by the level calculating section has periodicity; and

a howling deciding section for finally deciding whether howling occurs or not based on decision results of the howling detecting section and the periodic signal detecting section.

2. The howling detector according to claim 1,

wherein the howling detecting section includes:

an average level calculating section for calculating a mean value of levels of all frequency bands;

a level ratio calculating section for calculating a level ratio which is a magnification difference between the level calculated by the level calculating section and an average level calculated by the average level calculating section;

a level ratio analyzing section for analyzing the level ratio having been calculated by the level ratio calculating

section; and

a level ratio deciding section for deciding whether howling occurs or not based on an analysis result of the level ratio analyzing section.

3. The howling detector according to claim 1, wherein the periodic signal detecting section includes:

an envelope calculating section for calculating an envelope of the level having been calculated by the level calculating section;

a signal condition deciding section for deciding which one of predetermined signal conditions corresponds to the envelope having been calculated by the envelope calculating section; and

a periodicity deciding section for deciding, based on a decision result of the signal deciding section, whether time progression of the envelope has periodicity or not.

4. The howling detector according to claim 3, wherein the signal condition deciding section decides which at least one or more signal conditions of a rising edge of a signal, a signal interval, and a non-signal interval correspond to the time progression of the envelope having been calculated by the envelope calculating section.

5. The howling detector according to claim 3, wherein the periodicity deciding section compares at least one or more

of signal interval lengths and non-signal interval lengths between a latest time period and a past time period in the time progression of the envelope having been calculated by the envelope calculating section.

6. The howling detector according to claim 3, wherein the level calculating section, the howling detecting section, the periodic signal detecting section, and the howling deciding section perform processing only on some frequency bands.

7. An acoustic device comprising the howling detector according to claim 1 and a howling suppressor.

8. A howling detection method, comprising:

a frequency analysis step of analyzing a frequency of a time signal;

a level calculation step of calculating a level of a signal output from the frequency analysis step;

a howling detection step of analyzing the level having been calculated in the level calculation step and deciding whether howling occurs or not;

a periodic signal detection step of deciding whether or not time progression of the level having been calculated in the level calculation step has periodicity, and;

a howling decision step of finally deciding whether howling occurs or not based on decision results of the howling

detection step and the periodic signal detection step.